

invention can increase the access speed and can reduce the dimension and weight of the player. Since a user can choose desired music from the storage of the network service center, he can use his player conveniently by obtaining any desired music any time from a large storage in the service center. Therefore, the system can satisfy various users' tastes for music and can follow the latest fashion of music. When a digital portable stereo headphone player is fixed on a base station, then a communication function is added to the player, and the battery of the player can be electrically charged simultaneously. Any new additional function can be added to a digital portable stereo headphone player by mounting an extensive function card, and this promises further developments of such players.

That is, used as the bus for connecting respective parts is a PC standard bus (for example, ISA bus or PCI bus) which is most standard in the field of personal computers. By employing a circuit arrangement of a compatible architecture that uses such a common bus in the field of personal computers, the invention not only decreases the manufacturing cost of the entire digital portable headphone stereo but also realizes widest use and extensive use of the headphone stereo.

What is claimed is:

1. An audio reproducing apparatus, comprising:
control means for controlling entire behaviors;
storage means for writing and reading data;
audio expanding means for expanding compressed audio data;
external I/O means for transferring incoming and outgoing data, the transferring of incoming and outgoing data operative to charge an account associated with the transfer of such incoming and outgoing data; and
a personal computer standard bus for transmitting data among said control means, said storage means, said audio expanding means and said external I/O means, so that compressed audio data is stored in said storage means, and said compressed audio data is transferred to and expanded by said audio expanding means to be audibly reproduced.

2. The audio reproducing apparatus according to claim 1, wherein said storage means is a card-shaped recording medium.

3. The audio reproducing apparatus according to claim 1, wherein said storage means is a card-shaped hard disc.

4. The audio reproducing apparatus according to claim 1, wherein said personal computer standard bus is one of external buses including an ISA bus used in AT compatible machines and local buses including a PCI bus.

5. An audio recording apparatus, comprising:
control means for controlling entire behaviors;
storage means for writing and reading data;
audio compressing means for compressing audio data;
external I/O means for transferring incoming and outgoing data; and
a personal computer standard bus for transmitting data among said control means, said storage means, said audio compressing means and said external I/O means, wherein incoming data sent in a predetermined format is transferred through said external I/O means, and compressed audio data is generated from the transferred incoming data and stored in said storage means, the transferring of incoming and outgoing data operative to charge an account associated with the transfer of such incoming and outgoing data.

6. The audio reproducing apparatus according to claim 5, wherein said storage means is a card-shaped recording medium.

7. The audio reproducing apparatus according to claim 5, wherein said storage means is a card-shaped hard disc.

8. The audio recording apparatus according to claim 5, wherein said personal computer standard bus is one of external buses including an ISA bus used in AT compatible machines and local buses including a PCI bus.

9. An audio recording and reproducing system, comprising:

- an audio recording and reproducing apparatus incorporating control means for controlling entire behaviors;
storage means for writing and reading data;
audio expanding means for expanding compressed audio data;
external I/O means for transferring incoming and outgoing data, the transferring of incoming and outgoing data operative to charge an account associated with the transfer of such incoming and outgoing data;
- first functional means removably attached to said audio recording and reproducing apparatus to add a supplementary function to said audio recording and reproducing apparatus; and
- second functional means removably attached to said audio recording and reproducing apparatus to add a new function to said audio recording and reproducing apparatus.

10. The audio recording and reproducing system according to claim 9, wherein said first functional means has a structure that can contain the entirety of said audio recording and reproducing apparatus.

11. The audio recording and reproducing system according to claim 9, wherein said first functional means has a communication function and/or a power supply function.

12. The audio recording and reproducing system according to claim 9, wherein said second functional means is in form of a card that can be held within said audio recording and reproducing apparatus.

13. An audio recording and reproducing system comprising:

- an audio recording and reproducing apparatus incorporating control means for controlling entire behaviors, storage means for writing and reading data, audio expanding means for expanding compressed audio data, and external I/O means for exchanging incoming data;
- first functional means removably attached to said audio recording and reproducing apparatus to add a supplementary function to said audio recording and reproducing apparatus; and
- second functional means removably attached to said audio recording and reproducing apparatus to add a new function to said audio recording and reproducing apparatus,

wherein said second functional means adds the function of at least one of video compression, facsimile transmission, wireless transmission, pager, navigation and wire transmission.

14. The audio recording and reproducing system according to claim 13, wherein said first functional means has a structure that can contain the entirety of said audio recording and reproducing apparatus.

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15. The audio recording and reproducing system according to claim 13, wherein said first functional means has a communication function and/or a power supply function.

16. The audio recording and reproducing system according to claim 13, wherein said second functional means is in form of a card that can be held within said audio recording and reproducing apparatus.

17. An audio data transmission method, comprising the steps of:

receiving desired audio data through a communication line from an audio data base storing a plurality of pieces of audio data;

storing said audio data in a receiver to thereafter reproduce the audio data within the receiver, wherein

said audio data base is configured to send out to said receiver data in a predetermined transmission format for and to charge the service to an account of said receiver, the data in a predetermined transmission format including the audio data.

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18. The audio data transmission method according to claim 17, wherein said receiver obtains audio data by decomposing the data in said predetermined transmission format.

19. The audio data transmission method according to claim 17, wherein said audio data base and said receiver are connected via public telephone line.

20. An information receiving apparatus, comprising:
means for choosing desired audio data from an audio data base storing a plurality of pieces of audio data;
means for receiving desired audio data through a communication line and for storing the chosen audio data;
and
means for reproducing the stored audio data, wherein in response to receipt of the desired audio data an account associated with the receipt of desired audio data is charged.

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21. An audio reproducing apparatus, comprising:

a memory for writing and reading data;

an expander for expanding compressed audio data;

an external I/O port for transferring incoming and outgoing data, the transferring of incoming and outgoing data operative to charge an account associated with the transfer of such incoming and outgoing data;

a processor for controlling the memory, the expander and the external I/O port; and

a personal computer standard bus for transmitting data among said processor, said memory, said expander and said external I/O port, so that compressed audio data is stored in said memory, and said compressed audio data is transferred to and expanded by said expander to be audibly reproduced.

22. The audio reproducing apparatus according to claim 21, wherein said memory is a card-shaped recording medium.

23. The audio reproducing apparatus according to claim 21, wherein said memory is a card-shaped hard disc.

24. The audio reproducing apparatus according to claim 21, wherein said personal computer standard bus is one of external buses including an ISA bus used in AT compatible machines and local buses including a PCI bus.

25. An audio recording apparatus, comprising:

a memory for writing and reading data;

a compressor for compressing audio data;

an external I/O port for transferring incoming and outgoing data;

a processor for controlling the memory, the compressor and the external I/O port; and

a personal computer standard bus for transmitting data among said processor, said memory, said compressor and said external I/O port, wherein incoming data sent in a predetermined format is transferred through said external I/O port, and compressed audio

data is generated from the transferred incoming data and stored in said memory, the transferring of incoming and outgoing data operative to charge an account associated with the transfer of such incoming and outgoing data.

26. The audio reproducing apparatus according to claim 25, wherein said memory is a card-shaped recording medium.

27. The audio reproducing apparatus according to claim 25, wherein said memory is a card-shaped hard disc.

28. The audio recording apparatus according to claim 25, wherein said personal computer standard bus is one of external buses including an ISA bus used in AT compatible machines and local buses including a PCI bus.

29. An audio recording and reproducing system, comprising:

an audio recording and reproducing apparatus, comprising a memory for writing and reading data, an expander for expanding compressed audio data, an external I/O port for transferring incoming and outgoing data, the transferring of incoming and outgoing data operative to charge an account associated with the transfer of such incoming and outgoing data, and a processor for controlling the memory, the expander and the external I/O port;

a first functional device removably attached to said audio recording and reproducing apparatus configured to add a supplementary function to said audio recording and reproducing apparatus; and

second functional device removably attached to said audio recording and reproducing apparatus configured to add a new function to said audio recording and reproducing apparatus.

30. The audio recording and reproducing system according to claim 29, wherein said first functional device is configured to contain the entirety of said audio recording and reproducing apparatus.

31. The audio recording and reproducing system according to claim 29, wherein said first functional device has a communication function and/or a power supply function.

32. The audio recording and reproducing system according to claim 29, wherein said second functional device is in form of a card that can be held within said audio recording and reproducing apparatus.

33. An audio recording and reproducing system comprising:

an audio recording and reproducing apparatus comprising, a memory for writing and reading data, an expander for expanding compressed audio data, and external I/O port for exchanging incoming data, and a processor for controlling the memory, the expander and the external I/O port;

a first functional device removably attached to said audio recording and reproducing apparatus configured to add a supplementary function to said audio recording and reproducing apparatus;

a second functional device removably attached to said audio recording and reproducing apparatus configured to add a new function to said audio recording and reproducing apparatus, and

wherein said second functional device adds the function of at least one of video compression, facsimile transmission, wireless transmission, pager, navigation and wire transmission.

34. The audio recording and reproducing system according to claim 33, wherein said first functional device is configured to contain the entirety of said audio recording and reproducing apparatus.

35. The audio recording and reproducing system according to claim 33, wherein said first functional device has a communication function and/or a power supply function.

36. The audio recording and reproducing system according to claim 33, wherein said second functional device is in form of a card that can be held within said audio recording and reproducing apparatus.

37. An information receiving apparatus, comprising:

a user interface for choosing desired audio data from an audio data base and for storing a plurality of pieces of audio data;

a communication device for receiving desired audio data through a communication line and for storing the chosen audio data; and

a reproduction device for reproducing the stored audio data, wherein in response to receipt of the desired audio data an account associated with the receipt of desired audio data is charged.

38. An audio reproducing method, comprising the steps of:

writing and reading data to and from a memory;

expanding compressed audio data;

transferring incoming and outgoing data via an external I/O port, the transferring of incoming and outgoing data operative to charge an account associated with the transfer of such incoming and outgoing data;

controlling the memory, the expander and the external I/O port; and

transmitting data on a personal computer standard bus, so that compressed audio data is stored in said memory, and said compressed audio data is transferred to and expanded by said expander to be audibly reproduced.

39. The audio reproducing method according to claim 38, wherein said memory is a card-shaped recording medium.

40. The audio reproducing method according to claim 38, wherein said memory is a card-shaped hard disc.

41. The audio reproducing method according to claim 38, wherein said personal computer standard bus is one of external buses including an ISA bus used in AT compatible machines and local buses including a PCI bus.

42. An audio recording method, comprising the steps of:

writing and reading data to and from a memory;

compressing audio data;

transferring incoming and outgoing data via an external I/O port;

controlling the writing and reading, the compressing and the transferring; and transmitting data on a personal computer standard bus, wherein incoming data sent in a predetermined format is transferred through said external I/O port, and compressed audio data is generated from the transferred incoming data and stored in said memory, the transferring of incoming and outgoing data operative to charge an account associated with the transfer of such incoming and outgoing data.

43. The audio reproducing method according to claim 42, wherein said memory is a card-shaped recording medium.

44. The audio reproducing method according to claim 42, wherein said memory is a card-shaped hard disc.

45. The audio recording method according to claim 42, wherein said personal computer standard bus is one of external buses including an ISA bus used in AT compatible machines and local buses including a PCI bus.

46. An audio recording and reproducing method, comprising the steps of:

writing and reading data to and from a memory;

expanding compressed audio data;

transferring incoming and outgoing data via an external I/O port, the transferring of incoming and outgoing data operative to charge an account associated with the transfer of such incoming and outgoing data; and

controlling the writing and reading, the expanding and the transferring, wherein

a supplementary function is added by removably attaching a first functional device, and

a new function is added by removably attaching a second functional device.

47. The audio recording and reproducing method according to claim 46, wherein said first functional device is configured to contain the entirety of said audio recording and reproducing apparatus.

48. The audio recording and reproducing method according to claim 46, wherein said first functional device has a communication function and/or a power supply function.

49. The audio recording and reproducing method according to claim 46, wherein said second functional device is in form of a card that can be held within said audio recording and reproducing apparatus.

50. An audio recording and reproducing method comprising the steps of:

writing and reading data to and from a memory;

expanding compressed audio data;

transferring incoming and outgoing data via an external I/O port, the transferring of incoming and outgoing data operative to charge an account associated with the transfer of such incoming and outgoing data; and

controlling the writing and reading, the expanding and the transferring, wherein

a supplementary function is added by removably attaching a first functional device, and

a new function is added by removably attaching a second functional device,

wherein said second functional device adds the function of at least one of video compression, facsimile transmission, wireless transmission, pager, navigation and wire transmission.

51. The audio recording and reproducing method according to claim 50, wherein said first functional device is configured to contain the entirety of said audio recording and reproducing apparatus.

52. The audio recording and reproducing method according to claim 50, wherein said first functional device has a communication function and/or a power supply function.

53. The audio recording and reproducing method according to claim 50, wherein said second functional device is in form of a card that can be held within said audio recording and reproducing apparatus.

54. An information receiving method, comprising the steps of:

choosing desired audio data from an audio data base and storing a plurality of pieces of audio data;

receiving desired audio data through a communication line and for storing the chosen audio data; and

reproducing the stored audio data, wherein in response to receipt of the desired audio data an account associated with the receipt of desired audio data is charged.

55. An memory interface apparatus, comprising:

an internal bus;

an external memory connector for removably coupling a memory card;

a memory port connected to the external memory connector and coupled to the internal bus;

a plurality of external device connectors, each for coupling to a device that operates with the memory card;

a device port connected to each external device connector, the device port coupled to the internal bus;

a control panel coupled to the internal bus for designating an operation mode of the interface apparatus; and

a controller coupled to the internal bus, the controller responsive to the control panel for enabling communication between the memory card and at least one device coupled to at least one of the plurality of external device connectors.

56. A memory interface apparatus according to claim 55, wherein the device port comprises:

an analog to digital convertor for digitizing an input signal; and

a compressor for compressing the digitized input signal.

57. A memory interface apparatus of claim 55, wherein the device port comprises:

an expander for expanding a signal communicated from the memory card; and

a digital to analog convertor for converting the expanded signal into an analog signal.

58. The memory interface apparatus of claim 55, wherein the memory card comprises:

a card-shaped hard disc.

59. The memory interface apparatus of claim 55, wherein the internal bus is a one of external buses including an ISA bus used in AT compatible machines and local buses including a PCI bus.

60. The memory interface apparatus of claim 55, wherein the control panel comprises:

a liquid crystal display.

61. The memory interface apparatus of claim 55, wherein the interface controller comprises:

a central processing unit.

62. The memory interface apparatus of claim 55, further comprising:

at least one external device coupled to a respective external device connector, wherein the external device enables communication between a user and the memory card.

63. The memory interface apparatus of claim 62, wherein the at least one external device comprises:

one of a microphone and a headphone.

64. An memory interface apparatus, comprising:

an internal bus;

an external memory connector for removably coupling an external memory;

a memory port connected to the external memory connector and coupled to the internal bus;

a plurality of external device connectors, each for coupling to a device that operates with the external memory;

a device port connected to each external device connector, the device port coupled to the internal bus;

a control panel coupled to the internal bus for designating an operation mode of the interface apparatus; and

a controller coupled to the internal bus, the controller responsive to the control panel for enabling communication between the external memory and at least one device coupled to at least one of the plurality of external device connectors.

65. A memory interface apparatus according to claim 64, wherein the device port comprises:

an analog to digital convertor for digitizing an input signal; and

a compressor for compressing the digitized input signal.

66. A memory interface apparatus according to claim 64, wherein the device port comprises:

an expander for expanding a signal communicated from the memory card; and

a digital to analog convertor for converting the expanded signal into an analog signal.

67. The memory interface apparatus of claim 64, wherein the external memory comprises:

a card-shaped recording medium

68. The memory interface apparatus of claim 64, wherein the external memory comprises:

a card-shaped hard disc.

69. The memory interface apparatus of claim 64, wherein the internal bus is a one of external buses including an ISA bus used in AT compatible machines and local buses including a PCI bus.

70. The memory interface apparatus of claim 64, wherein the control panel comprises:

a liquid crystal display.

71. The memory interface apparatus of claim 64, wherein the interface controller comprises:

a central processing unit.

72. The memory interface apparatus of claim 64, further comprising:

at least one external device coupled to a respective external device connector, wherein the external device enables communication between a user and the memory card.

73. The memory interface apparatus of claim 64, wherein the at least one external device comprises:

one of a microphone and a headphone.

74. A memory interface apparatus comprising:

an internal bus;

an external memory connector for removably coupling a memory card;

a memory port connected to the external memory connector and coupled to the internal bus;

a plurality of external device connectors, each for coupling to a device that operates with a memory card;

at least one internal memory device coupled to the internal bus;

an input key coupled to the internal bus;

a compressor/expander coupled to the internal bus;

an analog to digital convertor coupled between the compressor/expander and one of the plurality of external device connectors;

a digital to analog convertor coupled between the compressor/expander and another one of the plurality of external device connectors;

a control panel coupled to the internal bus for designating an operation mode of the interface apparatus;

a driver coupled between the internal bus and the control panel; and

a controller coupled to the internal bus, the controller responsive to the control panel for enabling communication between the memory card and at least one device coupled to the plurality of external device connectors.

75. The memory interface apparatus of claim 74, wherein the at least one internal memory device comprises:

one of a hard disc, a read only memory and a random access memory.